pathognomonic of leukemia but is now recognized as a sign of any chronic illness with bone growth retardation.

Growth lines can often be correlated with a definitely marked illness but there is no good correlation with the severity of the illness, for often severe illnesses leave no such marks. Conversely, many children will show growth lines during a period in which no cessation of growth or illness can be documented.

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Congenital Bone Lesions Following Fetal Viremia

The longitudinal striations seen in the metaphyseal portions of some long bones in rubella syndrome are now thought to be due to damage to the fetal mesoderm with failure of subsequent maturation to osteoblasts. Consequently, columns of defective bone are formed which appear roentgenographically at birth as longitudinal, vertical, lucent striations. They are most common in the humeri and femurs. They usually disappear through remodeling in a few months.

These lesions were originally reported only with rubella syndrome, but recently reports have documented identical lesions in cytomegalic inclusion disease.

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Cerebrospinal Fluid Dynamics Studied With Radionuclides

Human serum albumin tagged with iodine-131 is currently being employed to evaluate the cerebrospinal fluid spaces in a number of neuropathologic conditions including communicating hydrocephalus, CSF rhinorrhea and otorrhea, arachnoidal cysts and other obstructing lesions resulting from a variety of causes. The albumin tracer is injected in radionuclide cisternography via a lumbar puncture and the upward flow and symmetrical distribution of the tracer over the brain surface is observed.

Evaluation of the interventricular flow of the CSF is accomplished by injecting the radioactive tracer directly into the ventricular system in a manner similar to that used in air ventriculography. In addition to demonstrating altered flow caused by obstructing lesions, radionuclide ventriculography is ideally suited for evaluating the patency of neurosurgical shunts, particularly in children, where shunt revision is occasionally necessary. Shunt patency can also be examined by injecting the tracer directly into the subcutaneous pump of many of the currently used ventriculo-vascular shunts.

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Isotope Lung Scanning In Pediatric Respiratory Disease

Although lung scanning with isotopes is a well established diagnostic procedure, its use has been greater in adults than in children, and particularly helpful in evaluation of pulmonary infarcts. Pendarvis and Swischuk presented a well-structured multi-method analysis of respiratory diseases in childhood utilizing the short half-like isotopes of indium, 113 iron hydroxide and the gamma camera scanning equipment. In addition to the isotope scanning, conventional radiography, arteriography and bronchography were used in each case.

Among conditions studied and reported were primary pulmonary artery anomalies, chronic respiratory disease such as tuberculosis, hilar and mediastinal masses, bronchiectasis, cystic fibrosis and congenital bullae.

Although isotope scanning is not a primary absolute diagnostic procedure, it is emerging in pediatrics as an increasingly useful correlative

study and may one day substitute for pulmonary arteriography and bronchography in selected cases.

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Radionuclide Angiography

Using modern high speed radionuclide cameras, it is possible to record the passage of radioactive substances through the vascular spaces. The resulting images do not provide the same degree of fine detail available with radiographic contrast angiography, but there are certain advantages in using radioactive compounds. The volume of the administered bolus is rarely more than 1 ml, allowing the injection to be made in an ordinary syringe either through a selective catheter or, more often, by a simple venipuncture. No toxic effects or untoward reactions have been reported with these isotonic and physiologically inactive solutions and this safety has permitted evaluation of major vessels more routinely. Clinical uses for this technique have included evaluation of cerebrovascular occlusions, screening for large aortic aneurysms, unilateral early signs of renal transplant rejection, arterial and venous obstructions of major vessels such as the superior vena cava syndrome, and the study of certain types of acquired and congenital heart disease.

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